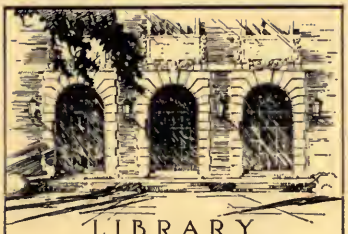

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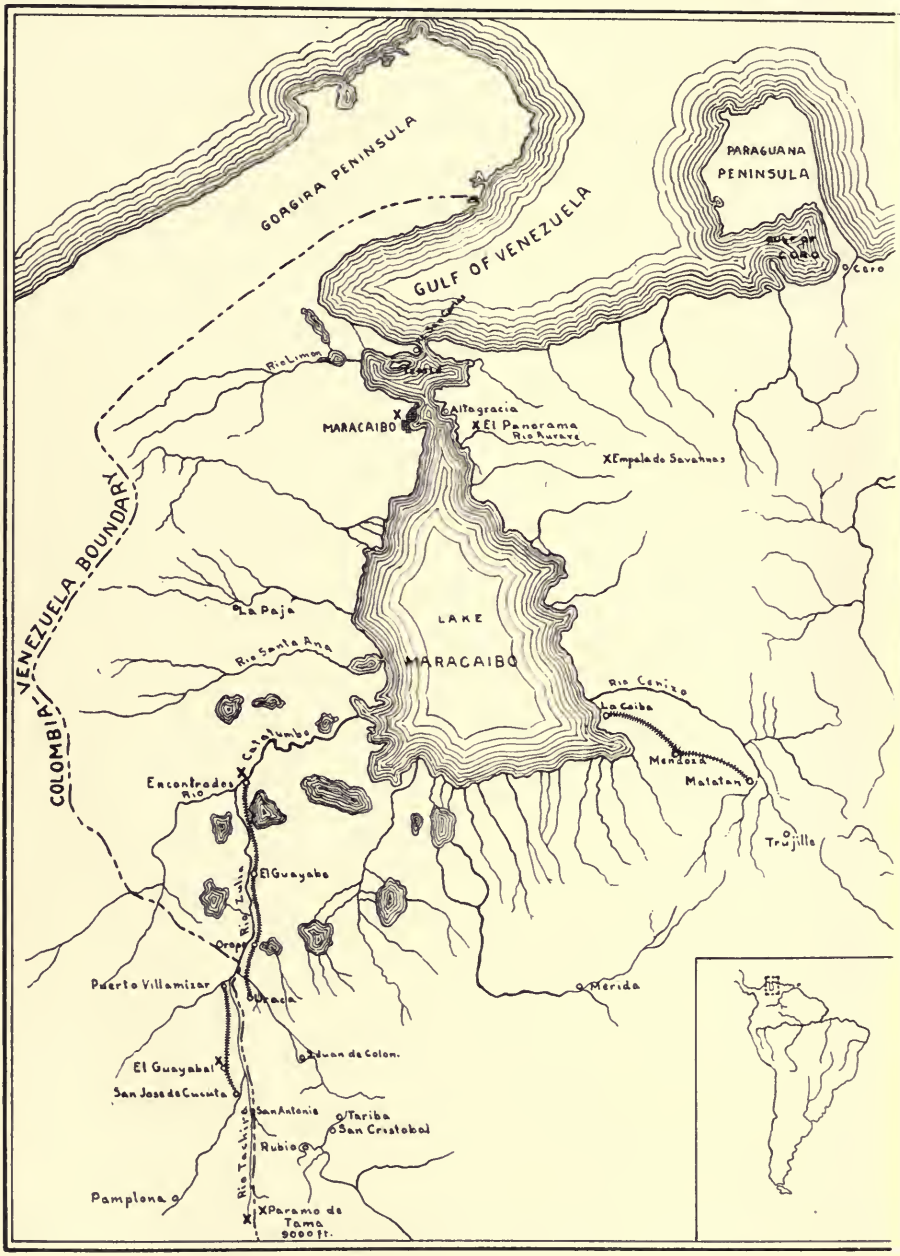

Map of Lake Maracaibo and adjacent region. Collecting stations marked x.

MAMMALS FROM WESTERN VENEZUELA AND EASTERN COLOMBIA.

BY WILFRED H. OSGOOD.

The subjoined report comprises the more obvious results derived from a study of the mammals recently collected in Venezuela and Colombia by the writer and Mr. Stanley G. Jewett, assistant. Owing to the relatively large amount of time necessarily spent in travel and preparation, actual field work was limited to about 40 days, but in that short time the rich fauna yielded 232 specimens of large and small mammals and 462 birds.

The birds have not yet been studied, but the percentage of novelty and value among the mammals is worthy of remark as indicating in slight degree the possibilities of South America as a field for zoölogical exploration. The mammals obtained include 10 species and subspecies new to science, some eight genera new to Field Museum, and three or four genera for the first time brought to an American institution. Practically all the species, known and unknown, were unrepresented in our collections, and a considerable number were not to be seen outside of Europe.

Of particular interest and value were the discovery of the habitat and the acquirement of complete specimens of the extraordinary marsupial, *Cœnolestes*. This was previously known only from imperfect native-made skins with skulls or parts of skulls and is one of the extremely few mammals, perhaps the only one of superfamily rank, of which the general anatomy and osteology are unknown. Study of the relationships of this animal and their numerous important bearings demands more time than is at present available. It is therefore deferred for adequate treatment in a later paper.

Sailing from New York December 31, 1910, we reached Maracaibo, Venezuela, via Porto Rico and Curaçao, January 9, 1911. During the delay before proceeding inland, a short trip was made from this point to the opposite shore of Lake Maracaibo where we were guests of Sr. Alberto Tinedo Velasco at his *hato* or ranch called El Panorama. Later on January 28, we took a lake steamer and proceeded to the southern end of the lake and thence up the Catatumbo River to the small settle-

ment of Encontrados. Disembarking, we continued by rail the following day to Uraca, the terminus of the "Gran Ferrocarril del Tachira." Thence with mules we quickly passed into the highlands to San Juan de Colon, and after slight delay in securing fresh animals, went on from there westward to San Jose de Cucuta, Colombia. Further mule travel brought us to the upper slopes of the Paramo de Tama, south of Cucuta, where camp was established at about 7,000 ft. altitude, first on the Colombian side of the boundary and later a few miles away on the Venezuelan side.

On the return a month later, several days were spent at El Guayabal near Cucuta. Rail transportation was then available to Puerto Villamizar and canoes from there to Encontrados, where we found a steamer lying at the bank bound for Maracaibo. Proceeding directly there, Mr. Jewett, who had contracted a slight malarial fever, immediately took passage for the United States while I remained to make a brief trip to the savannas of Empalado, some thirty miles east of Maracaibo.

Our collecting stations were comparatively few: (1) El Panorama, Rio Aurare, Venezuela; (2) Paramo de Tama, Colombia and Venezuela; (3) El Guayabal, Colombia; and (4) Empalado Savannas, Venezuela. A few specimens from other places were obtained from natives in Maracaibo, and a small collection secured for the Museum by Mr. H. F. Raven at Encontrados also is recorded at this time. The localities of our own work may be described briefly as follows:

El Panorama, January 17–24. Situated nearly due east of Maracaibo and scarcely beyond the sound of its church bells some eight miles away, El Panorama, the *hato* of Sr. Tinedo, is nevertheless a place of apparent isolation. It is reached by means of a shallow winding slew or *canya*, the lower part of which traverses a heavy growth of overhanging mangroves and the upper a broad expanse of waving bulrushes. The house and surrounding shelters from which we worked are on high ground overlooking a sea of bulrushes and grassy swamp with patches of open water in the distance. To the southwest is a mangrove swamp extending to the shore of the big lake, while south and east is relatively high dry land covered with the open forest characteristic of arid tropical regions. Wild pineapples or *mayas* abound, small palms and various cacti are scattered about, and numerous small and mostly thorny shrubs are features of the vegetation. A half a mile from the house is a large *cienega*, or spring-fed pond, and a few miles beyond are several smaller ones. The course of the Rio Aurare, which carries no water in the dry season, runs near by and is lost among

the mangroves bordering the lake. Cattle trails and bridle paths lead in all directions, and in general great freedom of movement is possible. Animal life is abundant and varied, including at least three associations of species, that of the mangroves, that of the rushes and open swamps, and that of the dry wooded upland.

Paramo de Tama, February 12–March 6. Paramo de Tama is the name applied to the more or less distinct mountain mass lying near the boundary between Venezuela and Colombia at the source of the Tachira River.* Our approach to it was along the course of this river and our final camps were near the headwaters, two days' hard travel from the hot valley in which Cucuta lies. Much of the lower slopes of the mountains is cultivated, or at least cleared and used for pasture. The country is rugged, however, and the mountains close in rapidly, sloping steeply to both sides of the river only a few miles south of the picturesque pueblo of San Antonio. Among the steep canyons well along the way is the settlement of Planadas, and some miles farther is Mundo Nuevo, a forlorn but quaint-looking little village perched on a shelving bit of mountain-side, from which steep declivities drop almost directly to the river.

Here we are in the *tierra fria* and although an occasional palm, a small cultivation of plantains, or a hedge of golden-fruited wild oranges still reminds that we are not in a northern region, there are many features distinctly incongruous with these. Waste places in the clearings support great patches of familiar looking wing ferns and thickets of veritable blackberries in full fruit, while about some of the houses are peach trees, and on the cultivated hillsides growing corn, potatoes, and beans.

Our headquarters were at the very last and uppermost hacienda, known as El Severia, where we were introduced by our good friend Sr. Don Mario Gonzales, the owner, and cordially received by Don Sebastian Valencia, the dueño, or manager. Considerable clearing surrounds the hacienda, and a few outlying *ranchos*, or thatched shelters for laborers, are encountered here and there, but in general the country above and beyond is in virgin condition. A great unbroken forest covers the slopes lying below the crescentic crest of the paramo, which is largely rugged, rocky, and bare, but with tongues of forest or straggling trees creeping over the summit at certain points.

The first camp was in the heart of this forest at an estimated altitude of 7,500 feet. A narrow rough trail having been cut for several

* The word *paramo*, strictly speaking, applies to the bleak plateau which usually characterizes the summit of such mountains, but in this case it often refers to the entire elevated region.

miles directly into the forest, a clearing was made for the camp, and short radiating trails cut in various directions, providing somewhat greater possibilities of movement than beating one's way through the undergrowth with a machete. The large forest trees, all of unfamiliar species, lace their tops together at an average height of something over 100 feet. Mists and drizzling rains prevail a great part of the year and mosses, air plants, and climbing vines thrive, but the growth in general is not so profuse as that of the hot tropics. A beautiful climbing bamboo is exceedingly abundant, and graceful tree ferns raise their spreading tops at pleasing intervals.

After two weeks in the forest we returned to the hacienda, and from there crossed the river and ascended the opposite slope on the Venezuelan side. Here we stopped at approximately the same altitude as at the former camp, but although heavy forest was readily accessible, clearings and partly burned areas predominated. An indistinct trail led upward to the cliffs of the summit of the paramo. A visit to these was very disappointing, for although scattered thickets and clumps of trees alternate with grassy openings and small ponds in somewhat Alpine character, little sign of animal life appears. The few birds seen were of species common at less elevation, and signs of small mammals were entirely lacking. In the swamps and woods about the camp, however, we obtained most of the species taken at the other camp and a few additional ones.

El Guayabal, March 12–17. The station of El Guayabal is a small one on the railroad connecting Cucuta and Puerto Villamizar. It serves only a very limited population engaged in farming and although only some ten miles north of Cucuta, it is in a region of slightly different character. This difference is not very pronounced and consists chiefly in the presence at El Guayabal of some features indicating a slightly more humid climate than that of Cucuta. That is, its character is somewhat intermediate between that of Cucuta, where it is dry, and that of Puerto Villamizar where it is relatively humid.

At Cucuta conditions are very arid, except near the river and in cultivated areas more or less under irrigation. Cacti and small thorny shrubs are the dominant types of vegetation. At Puerto Villamizar, on the other hand, there is heavy forest and luxuriant undergrowth. In passing by train between the two places one observes that the change from the arid type to the humid one is quite gradual. It has only begun at El Guayabal and in general the birds and mammals taken there belong to associations of species usually found in arid rather than humid regions. During the few days spent there, collecting was

done mostly along a wooded quebrada some three miles west of the railroad. This was probably quite dry earlier in the season but recent rains had left pools of water of considerable extent at frequent intervals along its course. The surrounding country consists of low rolling hills a few hundred feet in height and covered with forest of considerable density. The general elevation, however, is not great and the descent is very gradual to the Zulia River and the lowlands, through which it flows to Lake Maracaibo.

Empalado Savannas, April 6–14. In the vicinity of El Panorama and thence inland, there is practically continuous growth of moderate-sized trees, palms, cacti, and small shrubs, but some thirty miles to the east we suddenly emerge upon grassy openings varying in extent from two or three to several hundred acres. These, the so-called savannas of Empalado, are, strictly speaking, neither level nor treeless. Open natural pastures alternate with fairly extensive wooded areas, but narrow leads usually permit passage from one opening to another. The heaviest growth is naturally along the watercourses or quebradas, which are mostly dry during a great part of the year. Near our camping place, which was chosen with regard for them, were several cienegas and permanent pools of water. Abundant rains, however, soon robbed these spots of their distinction, and turbid floods covered the sandy bottoms formerly so conveniently used as highways by man and beast.* Many of the trees are of the same species found in the vicinity of El Panorama. The big feathery-leaved carocaro (*Pithecolobium*) is the most impressive of those growing near the quebradas, but is rivaled in size by the smooth yellow-barked copaiba which is found more commonly on higher, drier ground. Cacti are less common than at El Panorama but palms are more so. A large heavy bamboo is abundant, often covering extensive areas on low ground near the quebradas.

Passing acknowledgment has been made on other pages for some of the hospitable aid received during our work, but too much can scarcely be said. Mr. Ralph J. Totten, then American Consul at Maracaibo, assisted us in many ways, not only officially but also through a lively personal interest in natural history. Through him we met Sr. Don Alberto Tinedo Velasco, in whom we found a genial host at El Panorama as well as a hunter and naturalist with a keen interest in, and wide knowledge of, the animals of his country. Later, the trip to Paramo de Tama was made possible by Sr. Don Mario Gonzales of Cucuta, who invited us to his hacienda and even accompanied us on the rather

* It is perhaps worthy of note that we experienced one severe hailstorm, a phenomenon entirely novel to our native guides, some of whom were over fifty years of age.

arduous trip to it. The short visit to El Guayabal was arranged for us by Messrs. Köhler and Boué, German business men of Cucuta. To Mr. Boué we were indebted also for other courtesies. Sr. Don Jose Osorio, a prominent citizen of Maracaibo, went with us to the Empalado Savannas and performed various services for us in Maracaibo.

In identifying the collection of mammals, it has been necessary to borrow specimens from the U. S. National Museum, the American Museum of Natural History, and the Museum of Comparative Zoology. In addition, specimens were sent to the British Museum for comparison, since it is the unfortunate fact that all American institutions combined have not as yet sufficient material from South America to insure satisfactory identification of specimens requiring only a few weeks to gather. The cordial coöperation received from the officers of these institutions is most gratefully acknowledged. Special mention of courtesies received from particular individuals will be found elsewhere.

For the final preparation of the accompanying map, I am indebted to Mr. A. B. Walcott, Assistant in the Department of Zoology, Field Museum.

Cænolestes obscurus Thomas. Dusky Cænolestes.

Eleven specimens, Paramo de Tama, head of Tachira River, Colombia and Venezuela.

Being fortunate enough to find the home of these most interesting and little known animals, we made every effort to secure as many as possible, but after a month's work our series was still quite small. A limited amount of material for study of the osteology and gross anatomy was preserved and this it is hoped may form the basis of a subsequent paper to include also a discussion of habits and relationships.

One of our specimens was submitted to Mr. Thomas of the British Museum, who pronounces it specifically identical with *C. obscurus* from Bogota, agreeing in color and cranial characters and only showing such differences in proportions as are doubtless due to the unreliability of measurements taken from native-made skins. External measurements of 5 males average: Total length 240.6 (235–251); head and body 119.2 (113–135); tail vertebræ 121.4 (118–126); hind foot (c. u.) 23.5 (23–24.5). Of 5 females: 223 (209–230); 107.6 (106–113); 115.4 (103–121); 22.5 (22–23).

Didelphis marsupialis colombica Allen. Colombian Opossum.

One specimen, El Panorama, Rio Aurare, Jan. 21, 1911.

Owing to its very large size, this specimen, an old male, seems clearly referable to *D. m. colombica*, if that be a valid form. In fact, our specimen exceeds the average size of the Santa Marta series forming the original basis of the name *colombica* and almost equals *D. m. insularis* of Trinidad, the largest of the forms of *Didelphis marsupialis*. Flesh measurements are: Total length 865; tail vertebræ 435; hind foot 64. Skull: Greatest length 110.7; zygomatic breadth 63.5; postorbital breadth 27.4; nasals 53.3 x 17.6; upper toothrow, including canine 42, without canine 34.4.

Local name *Rabo Pelado*.

Didelphis paraguayensis meridensis Allen. Merida Opossum.

One specimen, Paramo de Tama, Venezuela. Alt. 6,000–7,000 ft.

This was caught by Mr. Jewett in a trap set in a large cavity under the roots of a tree in the deep forest. It is in the light phase and the dark facial markings are evidently not so greatly reduced as in the type of this subspecies. Possibly it is nearer to *D. p. andina*.

Local name *Faro*.

Marmosa mitis pallidiventris subsp. nov. Pale-bellied Mouse Opossum.

Type from El Guayabal, 10 miles N. of Cucuta, Colombia. No. 18692 Field Museum of Natural History. Female adult. Collected March 14, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Similar to *M. mitis* but slightly smaller and considerably paler, especially on the underparts. Chin, throat, chest, and middle of belly delicate pale whitish creamy instead of cream buff as in *mitis;* forefeet and carpal joint whitish without extension of darker from the forearm; upperparts, sides, and flanks a slightly paler shade of clay color than in *mitis*, the color of the sides gradually paling over the area of hairs with dark bases on either side of the midventral region; face markings practically as in *mitis*, the lower cheeks somewhat paler.

Skull slightly smaller than in *M. mitis;* rostrum more "pinched" in front of lateral expansions of nasals; otherwise similar.

Measurements. Type: Total length 284; head and body 129; tail vertebræ 155; hind foot (c. u.) 20. Skull of type: Greatest length 33.8; condylo-basal length 33.2; zygomatic breadth 18.9; nasals 15 x 4.5;

interorbital breadth 5.6; breadth of braincase 12.8; postpalatal length 12.2; three anterior molariform teeth 6.2.

Remarks. The area of hairs with dark bases seems to be quite as extensive in this form as in *M. mitis.* Therefore it seems scarcely possible that it is the same as *M. m. casta* in which this area is said to be greatly reduced.

The single specimen was brought to us by a boy who killed it with a stick as it ran from an overturned corn shock. Considerable trapping was done in the same field but none of this species was caught.

Myrmecophaga tridactyla artatus subsp. nov. Venezuelan Ant-bear.

Type (skull only) from Empalado Savannas, 30 miles east of Maracaibo, Venezuela. Adult. Collected March 1911 by W. H. Osgood.

Characters. Differs from *M. tridactyla* and *M. t. centralis* in its much narrower nasals and less expanded maxillaries, making the entire rostral part of the skull decidedly narrower; anterior lateral extensions of frontals less produced than in *centralis* but more so than in *tridactyla;* greatest depth of maxillary much less than in *tridactyla;* antero-inferior production of parietal considerably exposed on ventral surface of skull as in *centralis.*

Measurements of skull. Greatest length 346 (344);* length of nasals (median) 148.7 (150), (diagonal) 177 (178); greatest width of nasals 16 (19.6); least width of nasals 10 (14.2); greatest width of rostrum 22.3 (28.2); least width of rostrum 19.8 (24.3); greatest depth of maxillary 20.3 (20); least interorbital width 42.2 (45); median length of frontals 144.2 (140); mastoid width 54.4 (55.7); lacrymal 38.5 x 17.5 (31 x 18).

Remarks. This form seems well distinguished from both *M. tridactyla* of Brazil and *M. t. centralis* of Central America, the characters of which have been so clearly pointed out by Lyon (Proc. U. S. Nat. Mus., XXXI, pp. 569–571, pl. XIV, 1906). It is somewhat nearer *centralis,* agreeing with that form in the character of the antero-inferior part of the parietal and in the relatively shallow maxillæ. In the relations of the anterior productions of the frontals it is somewhat intermediate. A specimen from Dibulla, Colombia, loaned by the Museum of Comparative Zoology, evidently is referable to the new form although less pronounced in its characters than the type; while one from Ciudad Bolivar, Venezuela, belonging to the American Museum of Natural History, is quite as definitely referable to the Brazilian form.

Material is not as yet available to determine what external charac-

* Measurements in parentheses are those of an adult skull of *centralis* (No. 15966) from Guatemala.

ters, if any, distinguish the three forms. Our specimen was obtained through Don Alberto Tinedo who killed the animal a few weeks before our visit to the Empalado Savannas. During the few days we spent in this locality we failed to see any large anteaters, although they are regarded as not uncommon.

Local name *Oso Palmero.*

Tamandua tetradactyla instabilis Allen. Tamandua Anteater.

Two specimens, El Panorama, Rio Aurare (1), Empalado Savannas (1).

These agree closely with topotypes in the small size which seems to be the principal character. The animal is only moderately common in the Maracaibo region and the two specimens secured were the only ones seen. One was shot from the top of a small tree where it was discovered and called to my attention by workmen cooking their supper after dark under the tree. The other was met in midday ambling across the end of a small savanna. It quickened its pace somewhat when it saw me and as I advanced it finally broke into an awkward lope toward the nearest tree, which it started to ascend.

Local name *Oso Hormiguero.*

Dasypus novemcinctus Linnæus. Nine-banded Armadillo.

Fourteen specimens (skulls), vicinity of Maracaibo, Venezuela.

The nine-banded armadillo, *cachicamo* of the natives, is exceedingly abundant in the sandy regions on both sides of the northern end of Lake Maracaibo. Its favorite abode and safe retreat is in the extensive areas grown to the wild pineapple or *maya* the sharp claws of which, curving both inward and outward, render progress much simpler for armorclads than for animals less protected. The armadillos, the large land turtles, and certain iguanas, therefore, are found associated in these areas which are shunned by other quadrupeds except where open leads or trails permit easy passage. In the Empalado Savannas, armadillos were found inhabiting more accessible places, burrowing under clumps of low bushes, or in crevices of rock ledges. Their flesh is eaten by all classes of people and the stripped carcasses may be seen hanging in the market almost daily.

Possibly the Venezuelan nine-banded armadillo is not subspecifically identical with the Brazilian one which was the basis of the name, but this can best be settled by examination of the type which is still existing (see Thomas, P.Z.S., p. 142, Mch. 1911).

Local name *Cachicamo.*

Sotalia sp. Beaked Dolphin.

Small schools of dolphins were repeatedly observed in Lake Maracaibo from the brackish waters at the northern end to the most southern part as well as just within the mouth of the Catatumbo River. In most instances, they seemed to move rather sluggishly, appearing and reappearing at the surface with considerable regularity but without the vigor and dash usually displayed by more northern species. Their color, too, is dull and in muddy water they are rather inconspicuous.

A standing order for specimens was placed with the Chinese and native fishermen of Maracaibo, but they did not succeed in capturing any until a few weeks after our departure when two full grown individuals were secured. Through the interest of U. S. Consul Totten and Sr. Domingo Betancourt Sucré of Maracaibo, the skins of these were shipped in salt to the Museum together with the "beaks" of their skulls, the braincases unfortunately having been chopped away by the fishermen. Owing to the lack of complete skulls and to the confused state of knowledge of the genus *Sotalia*, the true relationships of the Maracaibo dolphins cannot well be determined at present. It is probable, however, that complete skeletons will be obtained later. The teeth in our specimens are slightly more numerous than usual, the formulas being $\frac{34-35}{33-33}$ and $\frac{32-33}{31-32}$. Measurements taken from a roughly stuffed skin with the long bony beak *in situ* are as follows: Total length 1700 mm.; front of dorsal fin to end of snout 740; front base of pectoral to end of snout 400; basal length of dorsal 240; height of dorsal 120; anterior base to tip of pectoral 260; greatest width of pectoral 113; angle of mouth to end of snout 220; front of eye to angle of mouth 38; total breadth of flukes 425; girth behind pectorals 720.

Local name *Tornina*.

Odocoileus gymnotis Wiegmann. South American White-tailed Deer.

Six specimens. Empalado Savannas, 30 miles east of Maracaibo, April 8–14, 1911.

This deer ranges throughout most of the drier parts of the region surrounding Lake Maracaibo, but it is much more abundant in the savannas of Empalado than in any other locality that came under our notice. This is perhaps partly due to the greater number of hunters that pursue all kinds of game for food in the immediate vicinity of the lake. A few tracks were seen near El Panorama and thence eastward, but in the heart of the savannas they were excessively abundant. Here within a few days we obtained a good series of specimens and saw

a number of animals daily. The region affords excellent opportunity for still hunting, but since the deer are most active after dark and our object being specimens rather than sport, we adopted the method of the native hunter, that is, watching from a point of vantage in a tree.

Although there is an abundance of other food, the deer prefer the fruit of various trees which they glean from the ground and since the fruit falls little by little from day to day, the animals form the habit of going regularly from tree to tree in search of the tidbits. The trees being often widely separated, it is perfectly simple to track the deer to their favorite resorts and await their return. In April the trees in bearing and therefore most resorted to were a large beautiful *Pithecolobium* known as the *carocaro* and yielding a curled fleshy brown pod and an unidentified smaller tree with rough bark and glossy leaves known as the *moquillo*, bearing scanty clusters of green drupes somewhat resembling short plump olives. Our watch was usually from 5 to 9 P. M. or even until 10 P. M., at which hour the animals were still moving. The greatest activity, however, seemed to be between six and eight.

The specimens obtained should eventually throw considerable light on the relationships of the nominal species *O. gymnotis* and *O. savannarum*, but without material from the savannas of Guiana little can be done at present. The type of *O. gymnotis*, in the Berlin Museum, is said to have come from Colombia but its exact source is unknown. As the earliest name applied to a deer coming from northern South America, it is more than likely to be the proper one for our specimens even though they were obtained in the "savannas." Moreover, they lack metatarsal glands and have practically naked ears, characters supposed to distinguish *gymnotis* from *savannarum*. External field measurements of an eight point buck are: Total length 1570; tail vertebræ 185; hind foot 392; height at shoulder 930; front of shoulder to hip 810; pectoral girth 870; circumference of neck 435.

Mazama americana citus subsp. nov. Venezuelan Brocket.

Type from El Panorama, Rio Aurare, eastern shore of Lake Maracaibo, Venezuela. Adult male. No. 18776 Field Museum of Natural History. Collected Jan. 19, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Similar to *M. americana* (*M. nemorivaga* of authors*), but slightly larger with especially large cheek teeth and minor cranial

* *Moschus americanus* Erxleben 1777 unquestionably applies to the same animal as *Cervus nemorivagus* Cuvier 1817 and there appears to be no reason for continuing the use of the later name. The dubious *americanus* found on an anterior page of Erxleben's work applies to the genus *Odocoileus* and therefore has no interest in this connection except among those not only making the strained attempt to give it nomenclatural status, but also failing to see generic distinction between *Mazama* and *Odocoileus*.

peculiarities; color paler and more grayish; cheek teeth 10 to 15 per cent larger than in *M. americana;* anterior half of parieto-squamosal suture abruptly deflected downward; basioccipital broad. General color of upper parts grizzled cinnamon gradually becoming paler on the sides where the punctulated effect is diminished and along the not very sharp demarcation between upper and under parts where the color becomes pale fawn or nearly ecru drab; top and sides of neck and sides of head and face brownish drab gray in considerable contrast to general body color; chin and upper throat buffy white becoming pale drab gray or ecru drab on lower throat and chest; belly buffy white, this continued about half way down the inner sides of the legs; front of forelegs deep brownish fawn merging into cinnamon and ochraceous buff on the sides and about the hoofs; hind legs below the hock pale drab all around, slightly darker in front; a white spot at tarsal gland; tail white below, pale cinnamon above, the hairs drabbish at bases; ears drabbish gray, the outside hairy at base and laterally but naked or nearly so in middle, inside and anterior edges with long white hairs; a prominent white spot on each side of the rhinarium and thence bordering the upper lips; a white spot also above each eye; ocular and postnarial areas rather indefinitely cinnamomeous in contrast to more grayish surrounding parts.

Measurements. Type and adult female, respectively: Total length 1,090, 1,060; tail vertebræ 105, 115; hind foot 278, 280; circumference of chest 600, 560; neck 240, 218; shoulder to hip 550, 570; height at shoulder 545, 587. Skulls of type, one adult female from Empalado Savannas, and one adult female *M. americana* from British Guiana,* respectively: Greatest length 189, 185, (183); zygomatic breadth 80.6, 81.8, (76.3); greatest length of nasals 50.6, 59, (51.5); tip of premaxillæ to front of pm^1 55.5, 56.1, (57.4); least breadth of basioccipital 16.6, 16.1, (14.5); greatest depth of squamosal (from top of meatus) 25, 25.5, (18.4); breadth of braincase 57.4, 55, (54.4); maxillary toothrow 61.5, 58.8, (51.5); breadth between outer sides of M^2 56.2, 56.3, (52.1); pm^1 9.5 x 6, 9.9 x 7.6, (7.6 x 6.8); M^2 12.7 x 12.4, 12.1 x 12.2, (10.2 x 10.8).

Remarks. Although there is considerable color difference, perhaps the principal character distinguishing this form from typical *americana* is the large size of the cheek teeth. To represent *americana*, one skin and two skulls from the vicinity of Georgetown, British Guiana have been available. Four specimens of the new form were taken by our party: The type, an adult male; a slightly younger female which was

* Measurements of *M. americana* in parentheses.

accompanying it when both were killed near El Panorama; a second female, fully adult, taken on the savannas of Empalado; and a spotted fawn which had been kept some days as a pet at El Panorama but obligingly died the night before our arrival there. Specimens from Bonda and Guairaca, Colombia, seem referable to the new form; likewise two adults from Dibulla, Colombia, loaned by the Museum of Comparative Zoology. All the skulls examined except very aged ones show traces of sockets of upper canines and it seems probable that these teeth are normally present in the young. In the skull of the spotted fawn above-mentioned, the canines are well-developed.

The tarsal gland in our three specimens is perfectly obvious in the dried skins, situated in a tuft of long hairs on the inner side of the hock, the central hairs which cover it being pure white except at the bases which are stained by sebaceous secretion. In the only Guiana specimen available, no traces of the gland are to be seen although it is possible they may have been destroyed in the preparation of the skin. Fitzinger and Lydekker, following him, state that this gland is not present in *M. nemorivaga*, but it is described and figured by Pocock (P. Z. S., p. 962, fig. 139, 1910) from a specimen which he believed "to have been correctly determined." Its source is unmentioned.

These little *matacanes* are quite abundant a short distance from the shore of Lake Maracaibo and thence eastward to the Empalado Savannas where they are much less numerous than the large deer (*Odocoileus*) to which the Spanish word *venado*, or deer, is exclusively applied. Like the larger deer, they feed upon the fallen fruits of various large trees, the "moquillo," the "carocaro" (*Pithecolobium*), and the so-called ebony being the particular ones in bearing at the time of our visits. Our specimens were killed with buckshot, two as they came to feed at the foot of a large ebony tree and the third as it jumped and galloped excitedly for cover when suddenly surprised feeding under the brow of a low ridge in the savannas.

Another brocket called *locho*, perhaps *M. rufa*, is described by the natives as larger and more reddish and of rather rare occurrence in the region.

Local name *Matacan*.

? Mazama bricenii Thomas. Merida Brocket.

Tracks and fresh signs of a small deer, possibly of this species, were seen in rather rare instances on the upper slopes of Paramo de Tama.

Tayassu torvum Bangs. Collared Peccary.

Two specimens, Maracaibo.

Peccaries are fairly common in the vicinity of Maracaibo, but although many tracks and at least one adult animal were seen, no specimens were obtained except two little ones only a few days old which were purchased alive in Maracaibo. These were led into my hotel room one morning trotting at the end of a string like a pair of puppies. I kept them alive for a few days in a corner of the room screened off by a woven wire bed spring. This was not altogether sufficient and had to be covered at the top, for much to my surprise, the little squealers were able to climb over. They would get in the angle, put their backs against the wall and their little hoofs in the meshes of wire and quickly scramble to the top and leap three and a half feet to the floor. At other times they did not seriously object to being handled, but when stopped in these attempts to escape, they snapped viciously with their tiny needle-pointed tusks. I gave them a plate of milk, but although I rubbed their noses in it and otherwise forced it upon them, it was some time before they understood it, although squealing with hunger all the while. Finally the larger more active one managed to suck up a little but the other seemed content to stand in the plate or to slide around in the milk spilled on the floor, constantly getting tangled up in his own umbilicus which dragged after him. Later they learned to eat rolled oats and water and sopped around in it with contented little grunts, which were much more agreeable than the plaintive squealing with which they had introduced themselves.

The color of these young peccaries, which were eventually made into specimens, is bright rufescent tawny thinly mixed with black, except a line from the occiput to the rump which is intense, sharply defined black.

The use of the name *torvum* for these specimens is necessarily provisional, since they are much too young for satisfactory identification.

Local name *Báquiro*.

Tapirus terrestris Linnæus. Tapir.

One specimen (skull), Empalado Savannas.

Contrary to our expectations, tapirs were found in relatively arid lowlands in regions of rather thin forest and little plant life of a succulent character. Tracks were seen in the sandy bottom of a dry quebrada a few miles west of El Guayabal near Cucuta, Colombia, and numerous others in a somewhat similar place in the Empalado Savannas east of

Maracaibo. At the latter place a fine adult female had been killed recently by Don Alberto Tinedo and we were able to obtain its skull. My only sight of one of the living animals was a brief glimpse at about 9 o'clock at night while on the watch in a hammock strung between bamboos at the edge of a dry quebrada. My attention was attracted by its heavy tread and the sharp crack of breaking sticks, and after a few moments of straining my eyes in the dim moonlight I saw the animal clearly outlined for a moment as it passed between two trees. It was moving deliberately and scarcely twenty yards away, but its position was such that I was unable to shoot.

Local name *Danta*.

Sciurus versicolor Thomas. Varicolored Squirrel.

Five specimens, El Guayabal, 10 miles north of San Jose de Cucuta, Colombia, March 12–17, 1911.

Reference of squirrels from this region to *S. versicolor* is necessarily provisional. They differ from typical *versicolor* in somewhat increased black on the end of the tail and perhaps, therefore, should be regarded as intergrades between *versicolor* and *zuliæ*.

The great variability of the squirrels of this group often has been remarked, and, while this is undeniably justified to a certain degree, it seems probable that with exact knowledge of physiographic and climatic conditions and good series of accurately labeled specimens, it will be found that this variation is not so much fortuitous or individual as it is local and environmental.

Squirrels were fairly common in the rather open forest along the quebradas a few miles west of El Guayabal. During our visit they were marauding the crops of our host, Señor Niño, and several were shot in the act of carrying away big yellow ears of corn.

Sciurus versicolor zuliæ Osgood. Zulia Squirrel.

Five specimens, El Panorama, Rio Aurare (2), Shore of Lake Maracaibo opposite Maracaibo (1), Empalado Savannas (1), Encontrados (1 H. F. Raven.)

Squirrels are sparingly distributed in the dry open woods on the northeast side of Lake Maracaibo, extending eastward at least to the wooded quebradas of the Empalado Savannas. At El Panorama, during eight days constantly in the field, I saw but one, and on the savannas for the same time, also one. On the immediate shore of Lake Maracaibo likewise they are scarce. The single specimen ob-

tained there was shot from a coco palm and its stomach was well filled with coconut.

At Orope, the type locality of *S. v. zuliæ*, the climate is so much more humid and the vegetation so much more luxuriant than at the northern end of Lake Maracaibo, that considerable difference in the animal life should obtain. However, it does not seem advisable at present to attempt the separation of the squirrels of these regions. Those from the more arid region have somewhat lighter heads, more intensely ferruginous feet, and broader, more abundantly haired tails.

Sciurus griseogena tamæ subsp. nov. Tama Squirrel.

Type from Paramo de Tama, Colombia. Alt. 6,000–7,000 ft. No. 18736 Field Museum of Natural History. Male adult. Collected Feb. 14, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Similar to *Sciurus g. meridensis*, but paler colored throughout; general color of upperparts only slightly darker than in *S. quebradensis*, but more rufescent on shoulders; tail and other parts quite different. Upper parts mixed clay color and blackish; shoulders heavily suffused with ochraceous continuous with the same but slightly heightened color on the outer sides of the forelegs; postauricular spot cream buff bordered with ochraceous buff. Underparts bright tawny ochraceous and white, the latter variable in extent, generally extending medially from the throat to the groin, widening on the chest and extending to the forelegs; fore and hind feet tawny ochraceous, on the metapodials more or less mixed with dusky; upper side of tail about as in *S. g. meridensis*, base (2 inches) grizzled, middle (4 inches) clear ochraceous buff, tip (1½ in.) black; under side of tail correspondingly colored but middle part strongly mixed with blackish.

Skull practically as in *griseogena* and *meridensis;* rostrum apparently a trifle more attenuate.

Measurements. Average of four topotypes: Total length 396 (385–416); head and body 216 (209–223); tail vertebræ 180 (176–193); hind foot (c. u.) 54 (53–55). Skull of type: Greatest length 53; basilar length 39.3; zygomatic breadth 30.5; nasals 16.7; interorbital breadth 17; diastema 13; maxillary toothrow 8.6.

Remarks. This form is most closely allied to *Sciurus g. meridensis* but is well distinguished by its general lighter color and the extensive white markings on the under parts. These white markings are variable, but three of the four specimens taken have them highly developed.

The extensive dense forests on the upper slopes of the Paramo de Tama no doubt harbor considerable numbers of these squirrels, but in

any particular locality they are scarce and difficult to obtain. They frequent the tops of trees most of the time none being seen on or near the ground. Their extreme shyness was remarkable, and unless they were suddenly surprised, it was impossible to get within gunshot of them.

Local name *Ardita*, variant of the Spanish *ardilla*.

Epimys alexandrinus (Geoffroy). Roof Rat.

One specimen, El Panorama, Rio Aurare.

Rats are perhaps more abundant in the seaport of Maracaibo than in the small interior villages but they are quite generally distributed, even extending to isolated houses near regular routes of travel.

Oryzomys meridensis Thomas. Merida Oryzomys.

Nineteen specimens, Paramo de Tama, Feb. 12–Mch. 6.

The habitat of these large long-tailed mice is in the cool depths of the heavy forest which prevails on the high mountain slopes. Here they live under logs and roots and about the mass of vegetable refuse covering the ground. Most of our specimens were caught in special size mouse traps but these are not quite strong enough for them and a fair percentage escaped.

The series shows considerable uniformity in color and agrees with a single typical specimen of *meridensis* but exhibits a few slight differences from a series representing *O. m. maculiventer*. The light markings of the under parts are less extensive than in *maculiventer* and more nearly pure white. The light inguinal area is much reduced and in some specimens is practically nonexistent. It seems possible, therefore, that *maculiventer* may be recognizable as a slight subspecies of *meridensis* and it remains to be seen whether or not both are subspecies of *albigularis*.

Average measurements of 10 adults are: Total length 303.3 (282–326); tail vertebræ 161.7 (145–175); hind foot (c. u.) 33.4 (32–35).

Oryzomys griseolus sp. nov. Grayish Pigmy Oryzomys.

Type from Paramo de Tama, head of Tachira River, Venezuela. Alt. 6,000–7,000 ft. No. 18635 Field Museum of Natural History. Male adult. Collected March 1, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Most similar to *Oryzomys vegetus* Bangs but slightly smaller and much duller in color; upper parts with an abundant mixture

of black-tipped hairs producing a somewhat grizzled effect most pronounced on the forehead and sides of face where fulvous is minimized and gray predominates. Ground color of upper parts pale clay color much duller than the ochraceous or ochraceous buff of the related forms *vegetus*, *tenuipes*, *humilior*, and *navus;* a small preauricular tuft of ochraceous-tipped hairs usually present. Under parts mostly between clay color and ochraceous buff almost or quite concealing the slaty bases of the hairs; middle of chin and throat white or whitish to bases of hairs; feet white; outer sides of tarsal joints broadly dusky; tail dusky above, dull whitish below. Mammæ 3–3 = 6.

Skull similar to that of *O. vegetus;* braincase deeper and more inflated; rostrum slightly more slender; zygomatic plate well developed, projecting forward farther than in related forms; palatine slits long, extending posteriorly to slightly beyond plane of front of first cheek tooth.

Measurements. Average of 7 specimens: Total length 183 (173–199); head and body 81 (76–85); tail vertebræ 102 (96–114); hind foot (c. u.) 21.7 (20–23). Skull of type: Greatest length 23; basilar length 17.1; postpalatal length 7.4; palatine slits 4.1; zygomatic breadth 12.3; interorbital constriction 3.6; width of zygomatic plate 2; diastema 5.7; maxillary toothrow 3.2.

Remarks. This species belongs to the group of small slenderly formed mice to which the subgeneric name *Oligoryzomys* has been applied. Although geographically nearer to *O. dryas humilior*, it shows greater resemblance to *O. vegetus* of Panama, especially in the extent of white on the throat and in the forwardly projecting zygomatic plate. *O. navus* of northern Colombia is brighter colored and has white under parts. *O. tenuipes* of Merida, which also belongs to this group, is paler throughout, the head and ears, especially, being more ochraceous. These appear to be the only described forms with which *griseolus* requires close comparison and its grayish head is sufficient to distinguish it from any of them.

Our series of thirteen specimens was obtained in and about small grassy swamps in clearings on the upper slopes of Paramo de Tama on the Venezuelan side of the Tachira River. Here they were not common and a line of 50 carefully placed traps seldom yielded more than two specimens in one night.

Thomasomys hylophilus sp. nov. Forest Vesper Rat.

Type from Paramo de Tama, head of Rio Tachira, Santander, Colombia. No. 18583 Field Museum of Natural History. Adult male. Collected Feb. 18, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Somewhat similar to *T. laniger* and *T. monochromos*, but larger with relatively small ears and a very long white-tipped tail. Pelage very long, soft, and lusterless; upper parts tawny olive rather heavily mixed with blackish, occasionally with a heavy concentration of blackish on middle of back; ears thinly haired or nearly naked distally, a tuft of soft black or blackish hairs at their anterior bases and extending backward over the anterior third of the ear conch; sides and face wood brown to tawny olive; a narrow and indistinct blackish eye ring; under parts cinnamon overlying slate color; fore feet silvery gray; forearm blackish; hind feet whitish drab, tarsal joints blackish brown, digits white; tail blackish above and below except a well-marked white tip.

Skull with ample braincase, the parietals slightly bulging; rostrum rather narrow and slightly depressed; front border of zygomatic plate somewhat receding; supraorbital border rounded anteriorly, very slightly angled posteriorly; palatine slits nearly or quite reaching plane of first molars; mesopterygoid fossa extending anteriorly to plane of middle of last molar; upper incisors with relatively little recurvature.

Measurements. Type: Total length 273; head and body 126; tail vertebræ 147; hind foot 26.5. Average of 10 adult topotypes: 261 (240–275); 120 (108–126); 141.6 (132–152); 25.8 (25–27).

Skull of type: Greatest length 30.5; basilar length 24.5; zygomatic breadth 16.3; interorbital constriction 4.7; length of nasals 10.8; width of nasals 1.3–3.7; postpalatal length 11.3; diastema 8.3; palatine slits 6.1 x 2.5; maxillary toothrow 5.1.

Remarks. Although well characterized otherwise, this species is to be recognized most readily by its long white-tipped tail. The amount of apical white varies from a mere pencil to nearly two inches and is totally absent in only one of a series of twenty-nine specimens. These were found associated with *Oryzomys meridensis* in the depths of the forests on the upper slopes of the paramo living among the innumerable galleries naturally formed under moss-covered roots, logs, and debris.

Rhipidomys fulviventer Thomas. Buff-bellied Vesper Rat.

Two specimens, Paramo de Tama, Venezuela.

The under parts of these specimens are quite sharply distinguished from the upper parts and although there is slightly more buffy suffusion across the middle of the belly than elsewhere, the general color from the chin to the vent is creamy white rather than fulvous. Still it cannot be called pure white and it may be within the variation of this species which is described as "fulvous or even buff, the line of demarcation

scarcely marked." Mr. Thomas has kindly compared one of our specimens with the type without finding differences that would warrant separation.

Microxus bogotensis Thomas. Bogota Microxus.

Eighteen specimens, Paramo de Tama, head of Tachira River, Colombia and Venezuela.

These mice were taken in small numbers in the depths of the forest on the Colombia side of the Tachira but were much more common in open grassy swamps on the slopes of the Venezuela side of the river. In fresh specimens, the pointed noses and rather small ears combined with the dense dark-colored fur, give them quite a soricine appearance. Their identification as *M. bogotensis* has been substantiated by the submission of specimens to Mr. Thomas of the British Museum. Average external measurements of ten adults are: Total length 150 (145–156); head and body 85.4 (82–91); tail vertebræ 63.4 (61–67); hind foot (c. u.) 19.1 (18–20).

Zygodontomys thomasi Allen. Thomas Zygodontomys.

Seven specimens, El Panorama, Rio Aurare (5) and Empalado Savannas (2).

Although trapping was done in various other places, specimens of this species were taken only on the low ground near the dry bed of the Rio Aurare among loose sticks, logs, and drift. The majority of them are practically indistinguishable from typical *thomasi*. Two individuals, although apparently mature, are decidedly smaller than the others, but it is difficult to believe this to be of specific significance.

Although formerly associated with *Oryzomys*, the species of this genus seem to have much in common with *Akodon*, but their true position in the involved series of Neotropical rodents is doubtless yet to be ascertained.

Zygodontomys thomasi sanctæmartæ Allen. Santa Marta Zygodontomys.

Two specimens, El Guayabal, 10 miles N. of San Jose de Cucuta, Colombia.

These mice, caught at the edge of a cornfield after much fruitless trapping, were practically the only small mammals secured at this locality. The single adult male agrees in color with lighter examples of *sanctæmartæ* from the type locality, but its skull is very large and

heavy. It may represent a separable form, but for the present it seems best to regard it as an exceptionally large and aged male of *sanctæmartæ*. The relation of this form to *Z. thomasi* is evidently very close, *sanctæmartæ* being characterized only by slightly larger size and somewhat more elongated skull. For the privilege of examining topotypes of both forms, I am indebted to Dr. J. A. Allen of the American Museum of Natural History.

Chilomys fumeus sp. nov. Smoky Chilomys.

Type from Paramo de Tama, head of Tachira River, Santander, Colombia. Alt. 6,000–7,000 ft. No. 18690 Field Museum of Natural History. Male adult. Collected Feb. 18, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Similar to *Chilomys instans* as described, but end of tail, digits of front feet, and distal phalanges of digits of hind feet white; size slightly smaller. Skull differing in slight details of measurement but in general similar to that of *C. instans*. Color of upper and under parts practically uniform, the hairs dark slate color except for a narrow tipping of silvery hair brown or broccoli brown; face between nose and eyes blackish; feet brownish; toes, at least the distal phalanges, white; tail brownish above and below except the terminal inch which is white with a few irregular underlying blotches of brownish; a bright buff pectoral spot (in one specimen) continuous with a white line from throat to middle of belly.

Measurements. Type and topotype, respectively: Total length 211, 206; head and body 90, 86; tail vertebræ 121, 120; hind foot (c. u.) 22, 23. Skulls of same: Greatest length 23.8, 23.4; basilar length 19.1, 18.9; postpalatal length 8.8, 8.4; zygomatic breadth 13.2, 12.8; braincase 12.8 x 11.1, 12.5 x 11.4; interorbital constriction 4.6, 4.8; width of zygomatic plate 2.1, 2; diastema 6.7, 6.5; maxillary toothrow 3.1, 3.15.

Remarks. Only two specimens of this peculiar mouse were obtained during some twenty days' trapping in the forests about the head of the Tachira. It inhabits the same dark damp depths of the forest as *Thomasomy shylophilus*, and from its peculiar plumbeous color, white-tipped tail, and slender form was at first believed to represent the immature of that species.

Material is not at hand for satisfactory discussion of the generic characters of *Chilomys* from a comparative standpoint, but several peculiarities not mentioned heretofore may be noted. The pollex is extremely rudimentary, and the soles of the hind feet lack imbrications, the subdigital pads being relatively large and the interspaces smooth and

without scales; the upper side of the hind feet, however, is unusually scaly and the scales being dark colored with lighter margins and but slightly overlaid by hairs, they are quite obvious. The skull is peculiar in shape and the dorsal view reminds rather forcibly of immature skulls of *Evotomys*. Aside from the forwardly projecting incisors, there are certain slight dental peculiarities not easily described, but it may be mentioned that the second upper molar is as wide as long and its outer side is markedly external to the outer sides of $M\frac{1}{1}$ and $M\frac{3}{3}$. Another unusual feature is a pair of swollen ridges lying on either side of the palatine foramina and in front of $M\frac{1}{1}$. So far as I am aware, with the exception of the type in the British Museum, no other specimens of this interesting genus have been recorded.

Sigmomys alstoni Thomas. False Cotton Rat.

Seven specimens, El Panorama, Rio Aurare (4), Empalado Savannas (3).

These were taken about the roots of cacti and small thorny shrubs and among crumbling exposed rocks in decidedly dry situations but always closely adjacent to grassy openings. They are evidently diurnal as practically all were caught in the day time. The exact type locality of this species is unknown but specimens from Cumana are regarded as typical by Thomas.* Whether our specimens differ from these cannot be determined except by comparison.

Heteromys anomalus brachialis subsp. nov. White-armed Spiny Pocket Mouse.

Type from El Panorama, Rio Aurare, eastern shore of Lake Maracaibo, Venezuela. No. 18623 Field Museum of Natural History. Adult female. Collected Jan. 19, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Similar to *Heteromys anomalus jesupi* but upper parts paler and front legs nearly all white; dark marking on outer side of arms reduced to a few scattered grayish hairs widely separated from the main body color by pure white. Ground color of upper parts drab somewhat brightened in middorsal region by wood brown and cinnamon; rump grayish drab or hair brown continuing along outer side of hind legs to calcaneum; feet white; tail grayish drab above, white below; ears narrowly edged with whitish.

Skull practically as in *H. anomalus* and *H. a. jesupi.*

Measurements. Type: Total length 284; head and body 134;

* Ann. & Mag. Nat. Hist. (7), VIII, p. 150, footnote, 1901.

tail vertebræ 150; hind foot (c. u.) 34. Skull of type: Greatest length 35.2; basilar length 25.5; zygomatic breadth 16.1; interorbital breadth 7.3; length of nasals 14.2; width of nasals 2.5–4.6; width of braincase 14.8; maxillary toothrow, crowns 4.8, alveoli 5.6.

Remarks. With a small series of each of the forms of the *anomalus* series before me, it is obvious that the one here described is sufficiently characterized for recognition, although it may be found to have a limited range. Specimens from San Julian, Venezuela, in the collection of the U. S. National Museum, supposed to represent "*melanoleucus*," seem to be tending slightly toward *brachialis* but are much nearer typical *anomalus*. Since the original description of *melanoleucus* states "legs and feet black" there can be little doubt that the type is of the dark form of eastern Venezuela and Trinidad. The majority of the specimens of *H. a. jesupi* seem to be almost or quite as dark as *anomalus*, differing mainly in the white inner sides of the arms.

Our specimens, six in number, were obtained under *mayas* and thorny shrubs which form hedgelike borders to the trails leading in various directions from El Panorama.

Dasyprocta rubrata flavescens Thomas. Yellow-rumped Agouti.

One specimen, El Panorama, Rio Aurare, Jan. 23.

This example, an adult male, was shot as it crossed a trail one evening just before dark. A few tracks of others were seen in various places, but with the one exception, the animals themselves succeeded in evading observation.

No material is available for comparison, but judging from descriptions our specimen differs but little from typical *flavescens*, possibly being slightly larger and darker.

Local name *Picure*.

Dasyprocta variegata colombiana Bangs. Colombian Agouti.

A skull of a young *Dasyprocta*, apparently of this species, was obtained in Maracaibo from a market hunter who said it came from the Limon River some 20 miles west of Maracaibo.

Agouti sierrae Thomas. Mountain Paca.

Said to be fairly common in certain heavily wooded parts of the mountains. We did not find it on Paramo de Tama although it is well known to the natives there.

Local names *Lapa* and *Tinaja*.

Hydrochœrus hydrochæris (Linnæus). Capybara.

Six specimens, El Panorama, Rio Aurare.

A series of shallow ponds near the Tinedo *hato* were the resort of several families of capybaras and during our stay from one to a dozen individuals were almost always to be found there. The ponds were surrounded by mangroves and heavy thickets of a tall clustering fern under which the animals retreated when alarmed. Once within the intricate depths of this cover they were almost as safely concealed as the rails and gallinules which frequently accompanied them. Although they fled precipitately upon sighting a man, they could hardly be called shy since they fed daily within a fourth of a mile of the *hato* where people were constantly coming and going. Moreover, they paid not the slightest attention to cattle and domestic hogs which wallowed in the same ponds with them. So far as could be observed their food at this time consisted principally of a fine slimy algæ forming a thick mat on the bottom of the ponds. They seemed to be quite diurnal and were most often seen feeding in glaring midday standing belly deep or with only their heads and hips above water, alternately rooting in the bottom and raising their heads to chew contentedly and look about. As they stand in the water, they have a decidedly saddle-backed appearance and the general shape of the body is that of a common guinea pig on a large scale.

The specimens secured range from quite young to fully adult. Measurements of an adult male are: Total length 1,000 mm.; circumference of chest 730; of belly at middle 900; of neck 445; hip to shoulder 650; height at shoulder (to end of toe) 500; hind foot 215.

Local name *Piropiro.*

Proechimys ochraceus sp. nov. Ochraceous Spiny Rat.

Type from El Panorama, Rio Aurare, Zulia, Venezuela. No. 18687 Field Museum of Natural History. Male adult (last molar very slightly worn). Collected Jan. 17, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Size small; tail short; color pale. Somewhat similar to *P. canicollis* but coloration of the head, neck, and legs not grayish but uniform with back and sides. Similar to *P. guairæ* but smaller and paler, therefore much the palest of the known members of the *cayennensis* group. Spines rather weak, confined to back, about 19 mm. long by .6 mm. wide. Color of upper parts chiefly tawny ochraceous lightly lined with blackish, the rump, sides of body, and outer sides of hind legs somewhat paler, more buffy; under parts pure white; hind

feet white except a slight extension of buffy and grayish on the tarsal joint; inner sides of forefeet white, outer sides including the fourth and fifth toes pale grayish; tail hair brown above, white below.

Skull short, broad, and but slightly ridged; parietals smoothly rounded laterally; palatine foramina broad; palate with a median ridge, but no lateral channels; pterygoid processes broad; teeth relatively large and heavy; audital bullæ actually and relatively larger than in *P. guairæ*.

Measurements. Type and one topotype, respectively: Total length 346, 341; head and body 196, 209; tail vertebræ 150, 132; hind foot (c. u.) 45, 44. Skulls of same: Greatest length 49.1, 49; basilar length 34.9, 35; zygomatic breadth 24.7; 24.3; length of nasals 18.1, 17.6; interorbital breadth 11.2, 11.3; interparietal 12 x 6.4, 12.5 x 7.1; diastema 9.9, 10; postpalatal length 19.2, 19.2; palatal foramina 6.2 x 2.8, 5.7 x 3.1; width of pterygoid process 1.9,—; crowns of upper toothrow 9.2, 8.8

Remarks. The bright ochraceous or almost ochraceous buff color of this species combined with its small size distinguish it from the other forms of northern South America. Its closest relationship is perhaps with *P. guairæ* but it is readily distinguished by its paler color, nearly pure white hind feet, and its small size. *P. cherriei* of the upper Orinoco evidently approaches it in size but is much darker in color. Practically all the other described forms are much larger.

Our specimens were trapped about the roots of the wild pineapple, locally known as *maya* and very abundant in the arid parts of the northeast shore of Lake Maracaibo.

Sylvilagus nigronuchalis continentis subsp. nov. Black-naped Rabbit.

Type from vicinity of Maracaibo, Venezuela. No. 18695 Field Museum of Natural History. Collected Jan. 13, 1911, by W. H. Osgood and S. G. Jewett.

Characters. Very similar to *S. nigronuchalis* of the islands of Aruba and Curaçao but slightly more rufescent in color especially on the forehead and nose; ears more broadly tipped with black. Skull practically as in *nigronuchalis*. Upper parts mixed with pale buffy or clay color and black; interorbital region slightly more buffy or rufescent than back; nape deep black extending in made skins about to the ends of the laid back ears; ears ("proectote") buffy brown except a grayish area near the inner base and a broad intensely black tip; a broad buffy ring surrounding the eye except the anterior lower half; rump grayish; under-

parts except throat white, somewhat more narrowly so than in *nigronuchalis*.

Measurements. Average of five adults: Total length 403 (390–415); tail vertebræ 39.6 (35–43); hind foot 78 (75–80); ear from notch (dry) 52 (50–54). Skull of type: Greatest length 72.4; basilar length 67.5; zygomatic breadth 33.7; width of mesopterygoid fossa 5.4; nasals (diagonally) 30.7; interorbital breadth 17.8; diastema 21; palatine foramina 19.8 x 5.8; maxillary toothrow, crowns 11.7, alveoli 14.3.

Remarks. This black-naped rabbit is excessively abundant in the vicinity of Maracaibo and in the similarly arid region on the east side of the lake, extending in this direction at least to the Empalado Savannas where it is rather rare. It is sold daily in the market of Maracaibo and it was there our specimens were obtained. The Venezuelans hunt it at night with a torch made from a tightly wrapped bundle of dry sticks, one man carrying the torch and another the gun, usually a single-barreled muzzle-loader of the cheapest possible construction. At other times small ground fires are kindled at intervals throughout several acres and the hunter goes stealthily from one to the other shooting such rabbits as have been attracted by the lights. The rabbits seem to be exclusively nocturnal, not stirring even in the short twilight of morning and evening. At daybreak or nightfall I repeatedly traversed localities much frequented by them but had no glimpse of one.

The abundance of these rabbits at this locality combined with the fact that specimens have not before reached a museum probably indicates that their range is limited. They are quite distinct from the rufous-naped species of the *gabbi* and *brasiliensis* series which occur east and west in Colombia and eastern Venezuela respectively. From the insular form, however, they are distinguished only by slight average characters.

? Sylvilagus meridensis Thomas. Merida Rabbit.

Some small rabbit is of rare occurrence on the upper slopes of Paramo de Tama, but we were unable to obtain it. It is known to the natives and we corroborated their reports by finding a few much-weathered pellets of dung.

Tremarctos ornatus majori Thomas. Northern Spectacled Bear.

The spectacled bear inhabits the heavy forests of the Paramo de Tama but is very seldom seen and at least in the particular localities we visited is decidedly rare. We found no tracks and only one frag-

ment of dung was observed during our four weeks on the paramo. The dried foot and claws of a bear killed several years previously was exhibited to us at the hacienda "El Severia" just below our camps. Natives say the bears live almost exclusively in the forest and it is only on the very rare occasions when they wander out into the cultivated clearings that they have been killed. One of their favorite foods is said to be obtained from some part of a small hardy palm which grows sparingly at considerable altitudes.

Potos flavus meridensis Thomas. Merida Kinkajou.

A captive kinkajou was seen in Cucuta, and although the species was not noted elsewhere, it is probably generally distributed.

Local name *Cuchi-cuchi.*

Canis thous savannarum Thomas. Savanna Fox.

Two specimens, Empalado Savannas, 30 miles east of Maracaibo, Venezuela, April 8, 1911.

Foxes or "zorros" are common from the shore of Lake Maracaibo eastward. Our specimens agree very closely with the description of the subspecies *savannarum* from the savannas of Guiana. They were killed with small shot from a lookout in a tree at about nine o'clock in the evening. As seen from above in rather dim moonlight against a background of sandy soil and tufts of dry grass, only their black dorsal streaks were visible. These appeared to glide sinuously over the ground in a most uncanny manner and as I fired I could not imagine what they would prove to be.

Field measurements are, for male and female respectively: Total length 870, 890; head and body 616, 597; tail vertebræ 254, 293; hind foot 125, 130.

Felis onca Linnæus. Jaguar.

One specimen, Maracaibo (purchased).

Jaguars are quite common throughout the region surrounding Lake Maracaibo. They are held in considerable fear by most of the native hunters and though frequently killed by them it generally occurs when all the circumstances favor the hunter. This is most often when *el tigre* unexpectedly appears while the hunter is perched in a tree watching for deer and a heavy charge of buckshot at short range is generally effective. We noted considerable evidence of the destruction of cattle by jaguars, especially in the region between Lake Maracaibo and the

Empalado Savannas. Of their natural prey, the capybara is perhaps the favorite and they doubtless do not hesitate to pursue it into the water. A partly eaten carcass of one of the big rodents was found near our camp in the Empalado Savannas but the jaguar that had been frightened from it failed to return.

Jaguars seem not only to have less distaste for water than most cats but even enter it and swim freely. In some of the mangrove swamps near Maracaibo their trails are frequently found leading to the edge of rather wide channels of water and out on the other side. According to report, two were killed in Lake Maracaibo not long ago while swimming from the mainland to Toas Island, a distance of more than two miles.

Felis pardalis subsp. Ocelot.

Evidently not very common. Several poorly prepared skins offered for sale in Maracaibo were purchased for a few cents each. The enterprising venders, in the expectation of a higher price, insisted that these were the skins of young jaguars but after being convinced that we could not be fooled in this way, acknowledged their deception.

An occasional track of an ocelot was seen near El Panorama and once I was so fortunate as to see one of the animals. This was in the full heat of midday and rather unexpected. It was surprised at a little pool of water among some large mangroves and bounded across in front of me scarcely 30 yards away, presenting a very attractive sight.

Tracks of some small cat about the size of an ocelot were seen at high altitudes on Paramo de Tama.

Local name *Tigrillo.*

Felis concolor Linnæus. Cougar.

According to report, cougars are not uncommon in certain districts near Maracaibo. They are seldom seen, however, and to successfully hunt them good dogs are necessary. One hunter living on the shore of the lake and almost directly opposite Maracaibo is reputed to have killed from twenty to thirty during the last fifteen years. Several hides in poor condition were seen in Maracaibo.

Local name *Leon* or *Leon bayo.*

Lutra sp. Otter.

One hears but little of otters although it is probable they are generally distributed. A dressed hide was seen in Colon.

Tayra barbara Linnæus. Tayra.

One specimen, Empalado Savannas, April 8.

This is an adult male shot and presented by U. S. Consul Totten who encountered it roving about in midday. External field measurements are: Total length 1035; head and body 625; tail vertebræ 410; hind foot 118.

Local names *Guache* and *Guanaico*.

Mustela affinis Gray. Allied Weasel.

Two specimens (♂ and ♀), Paramo de Tama, head of Tachira River, Venezuela and Colombia.

One of these was caught in a steel trap baited with birds and set by the side of a rushing mountain stream, the conditions being essentially those under which so many weasels are caught in more northern countries. The other was shot in midday as it came prowling about our "house" in the clearing on the Venezuelan side of the Tachira.

No doubt these specimens are fairly typical of *M. affinis*, the type of which is stated to have come from "Columbia." They differ from a specimen from Sierra de Merida only in somewhat richer color of the under parts, the male being bright orange rufous on the abdomen and paler on the chest, throat, and inguinal region. The white marking in front of the ear is absent in the female which is in very fine coat, the entire upper parts except the head and tip of tail being rich seal brown so dark that the blackish head and tail-tip are not in great contrast. The general appearance of the upper parts, therefore, is extremely suggestive of a miniature of a North American mink.

Conepatus mapurito Gmelin. Hog-nosed Skunk.

One specimen, El Panorama, Rio Aurare, Jan. 19.

Although taken in the dry coast lowlands, this specimen must for the present be referred to *C. mapurito*, the type locality of which is Pamplona, Colombia, in the cool highlands not far from Paramo de Tama. It is greatly to be regretted that our efforts to secure skunks in that vicinity were unsuccessful. The Rio Aurare example is thinly haired and has two short white dorsal stripes, apparently being quite similar in markings to the Bogota specimen to which Thomas has referred.* External field measurements are: Total length 600; head and body 387; tail vertebræ 213; hind foot 74.

Local name *Mapurite*.

* Ann. & Mag. Nat. Hist., (7), II, p. 318, 1898.

Blarina meridensis Thomas. Merida Short-tailed Shrew.

Sixteen specimens, Paramo de Tama, head of Tachira River, Venezuela and Colombia.

The locality from which this series comes lies between Bogota and Merida, type localities respectively of the two known South American species of *Blarina*. The difference between the two forms is mainly of size and our specimens agree in that respect with *meridensis*. A specimen submitted to Mr. Oldfield Thomas is pronounced by him to be typical of that species.

Shrews can scarcely be called abundant in this locality since a line of over 100 traps seldom yielded more than one or two in a single night. Their habits apparently are similar to those of their northern relatives and like them they readily take oatmeal bait in traps set in moist places in the heavy woods or along trickling streams. Average flesh measurements of ten adults are: Total length 123.7 (120–129); tail vertebræ 36.3 (35–38); hind foot (c. u.) 15.4 (15–16).

Molossus crassicaudatus Geoffroy. Lesser Dusky Molossus.

Eleven specimens, Maracaibo, March 23–29.

Two of these were caught fluttering about a lighted room at night and the others were taken from the hollow pillars surrounding the patio of the American consulate. The species is excessively abundant in the city of Maracaibo in which every suitable building harbors it in numbers. In walking the streets towards evening, or frequently during the day, one hears the wheezing cries of many bats from concealed cavities under eaves and cornices.

Dr. G. M. Allen, who has recently elucidated the status of this species, has kindly made critical examination of specimens from our series. Measurements of forearms of 10 alcoholic specimens average 39.3 (38–40.5) mm.

Noctilio albiventer minor Osgood. Lesser Noctilio.

Noctilio minor Osgood, Field Mus. Pub. No. 149, Zoöl. Ser. X, p. 30, Oct. 20, 1910.

Two specimens (skins), El Panorama, Rio Aurare, Jan. 18.

A slight difference in size between these two specimens, both of which are males, and the fact that both are slightly larger than the type of *N. minor*, which is a female, makes it more than likely that *N. minor* is only subspecifically separable from *N. albiventer*. The color also is variable, the upper parts in one being bright cinnamon

rufous to chestnut without trace of middorsal streak and in the other dull clay color with an indistinct light median streak.

Diæmus youngi (Jentink). Blood-sucking Bat.

One specimen (skin), El Panorama, Rio Aurare, Jan. 21.

This rare bat, one of the few known specimens, was disabled by a blow from a light club in the hands of our cook-boy who discovered it hovering near his fire one evening after complete darkness had set in. The color of the under parts in our specimen is much as in many examples of *Desmodus rotundus*, the hairs cinnamon brown or lighter at the bases and ecru drab at the tips. The upper parts are rather dark cinnamon brown more glossy and uniform than in *Desmodus;** between the shoulders is a thinly haired patch in which the light bases of the hairs are evident. The white wing markings are very pronounced, as follows: Antebrachial membrane sharply and narrowly white-bordered; membrane between second and third fingers largely white, this extending to the covering of the bones of the second finger; wing tips white to middle of membrane between third and fourth fingers; lower edge of wing white-bordered throughout. The skull differs from that of *Desmodus* in several characters which have not been pointed out. The braincase is much broader and more expanded laterally; the zygomata are heavier and more angular anteriorly; the audital bullæ are nearly twice as large; and the palate is shorter, broader, and less excavated.

A specimen of *D. youngi* from Parana, Brazil, loaned by the U. S. National Museum, is markedly paler than ours, being uniform rather glossy clay color; but considering the great color variation in bats and since no dry specimens from Guiana are available, separation at this time does not seem warranted.

Artibeus jamaicensis palmarum Allen and Chapman. Palm Artibeus.

One specimen (skin), Encontrados, Sept. 25, 1910; collected by H. F. Raven.

Andersen, in his careful monograph of *Artibeus*,† has recognized a subspecies under the name *palmarum*, on the basis of a very slight average reduction in the size of the teeth. Therefore, it seems best at

* In selecting specimens of *Desmodus* for comparison, I find a noticeable difference in size between examples of typical *D. rotundus* from Paraguay and specimens from Mexico and Central America. In typical *rotundus*, the forearm measures 60–64 mm., while in Mexican and Guatemalan specimens the maximum is 55. A corresponding difference is shown by the skulls. It would seem advisable, therefore, to recognize a northern subspecies, using Wagner's name *murinus* (Suppl. Schreb. Säugeth., I, p. 377, 1840) which would stand as *Desmodus rotundus murinus* Wagner.

† Proc. Zool. Soc. Lond., pp. 205–319, 1908.

present, with no great accession of new material, to use this name. But after noting the faint-hearted and apologetic way in which the monographer has given it place,* and after the comparison of our Venezuelan specimen with a single Brazilian one and finding the teeth of the latter actually the smaller, one is strongly tempted to discard *palmarum* in favor of *lituratus*.

Uroderma bilobatum Peters. Common Uroderma.

Two specimens (skins), Encontrados, Sept. 25, 1910; collected by H. F. Raven.

Vampyrus spectrum (Linnæus). False Vampire.

One specimen (skin), Encontrados, Sept. 30, 1910; collected by H. F. Raven.

Saccopteryx leptura (Schreber). Striped Sac-winged Bat.

Three specimens (skins), El Panorama, Rio Aurare, Jan. 18–21, 1911. Two were obtained from their diurnal resting place in a decayed crevice in the side of a tree and the third was shot while flying back and forth over a trail bordered on either side by tall trees. Others, apparently of the same species, were seen.

The palest specimen agrees well with the description of *S. canescens* except for the slight development of the light superciliary stripe. The head and under parts are pale Isabella color, the back more brownish, and the marginal hairiness on the membranes slightly rusty. The darkest one is chiefly Vandyke brown, becoming seal brown between the light stripes. The third is intermediate between the other two, thus forcing the conclusion that color is of relatively little importance.

Rhogeëssa io Thomas. South American Rhogeëssa.

One specimen (skin), El Panorama, Rio Aurare, Jan. 24; two specimens (in alcohol), 10 miles north of Cucuta, March 16; seven specimens, Empalado Savannas, April.

The color of the body and head of the dry specimen evidently is even brighter than that of the type as described by Thomas. Both upper and under parts are bright clay color (Ridgw., Pl. V, No. 8), the head and shoulders being somewhat lighter than the back and rump

* In one place (p. 278), he says,—"I should not have tried to keep this form separate from *A. j. lituratus*, if the name *palmarum* had not been available," thus confessing a prostitution of zoology to nomenclature which scarcely seems justifiable.

and the bases of the hairs everywhere being lighter than the tips. A specimen of *R. tumida* from Mexico is very decidedly darker throughout. The skull is slightly smaller and especially narrower than in *R. tumida*, but the braincase is by no means lower and flatter as is said to be the case in the type. Measurements of forearms indicate some variation in size, the smallest scarcely exceeding *R. minutilla*. They are as follows: 27.2, 26.8, 25.8. Probably this and other forms will eventually be regarded as subspecies of *R. tumida*.

One specimen was caught in a net as it was issuing from its roosting place among the dead rushes forming the thatched roof of an outbuilding; two others were "switched" as they rapidly flitted about our heads under the covered portico of a dwelling house; and the remainder were obtained in similar manner about the camp in the savannas.

Myotis nigricans concinnus (H. Allen). Northern Blackish Bat.

One specimen (skin), El Panorama, Rio Aurare, January 22.

The small size, narrow skull, and dull color of this specimen amply distinguish it from typical *nigricans* of Brazil. It agrees closely with certain specimens from southern Mexico in the collection of the U. S. Biological Survey probably representing *M. n. concinnus*, a name which has been called to my attention by Mr. Gerrit S. Miller, Jr.* *M. nesopolus* of the island of Curaçao also is closely related.

Myotis albescens (Geoffroy). Pale-bellied Bat.

One specimen (skin), El Panorama, Rio Aurare, January 22.

Comparison of this bat with typical examples of *albescens* from Paraguay reveals a few slight differences; but until the status of several names is determined, especially *Vespertilio arsinoë* Temminck of Surinam, and until more material is secured, it seems best to allow our single specimen to rest under the "blanket name" *Myotis albescens*.

Alouatta senicula Linnæus. Red Howler.

The red howlers are abundant in the Maracaibo region. They are heard daily in the mangrove thickets on the east side of Lake Maracaibo and several were seen in the *canya* leading from El Panorama to the lake. One very large male was encountered there at very short range, suddenly coming into view through an opening as we pushed our little flat-bottomed *cayuca* up the oozy channel. He appeared too startled

* Cf. Proc. Biol. Soc. Wash., XIII, p. 154, June 13, 1900.

to move immediately but stood facing us from the top of a mangrove, his rich color glowing in the full glare of the sun. In ascending the Catatumbo River to Encontrados by steamer, we saw some forty or fifty howlers from the deck of the boat. They were in parties of five or six nearly always including several half grown young.

Local name *Araguato*.

Cebus apella leucocephalus Gray. Brown-faced Capuchin.

A small troop of monkeys apparently of this species was seen clambering through the tops of some thinly foliaged trees near El Panorama, Rio Aurare. Several captive animals were seen at various times in Maracaibo.

Interior of forest on Paramo de Tama at 7,000 ft. altitude.

Vegetation of arid region near Lake Maracaibo.

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